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SPACE CENTER Roundup

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Two special girls finally get their day in the sun

April 26 may have been just the start of another week for most people, but for two little girls, it was a red-letter day as they got a chance to do something most people take for granted – go outside and play on a nice sunny day.

The two girls, Amanda Clanton, 9, from Crosby, Texas, and Erica Lumas, 6, from Honduras, both suffer from a rare skin disorder called xeroderma pigmentosum or XP. Since there is no cure, those with the disorder can only curtail it by avoiding UV radiation, staying indoors with sunlight blocked out or by using protective clothing.

April 26 was the first day they were able to play in the sun without risk of getting skin cancer.

The girls and their families met at Space Center Houston with JSC officials along with representatives from the non-profit HED (Hypohidrotic Ectodermal Dysplasia) Foundation and Related Disorders of Hampton, Va., organization, and they each received a special UV protection suit that was developed from space-based technology.

The protective suits include a white jacket, pants, gloves and headgear, including goggles. The external garments protect the children's sensitive skin from more than 99.99 percent of the sun's UV rays. Underneath, the children wear a small cooling support system, necessary because full-body UV suits can get warm. The cooling unit has no moving parts, using 4 gel packs in a vest-like garment. The gel packs can supply cooling for two to four hours and can be recharged in a refrigerator in about 30 minutes.

After the girls received the suits, they put them on and boarded a tram for a short visit to Rocket Park.

The suits have made a huge impact in the lives of those who have used them, enabling them to go outside in

Angie Calloway (far right) stands behind her daughter Amanda Clanton, 9, as she gives Erica Lumas, 6, standing, a hug at Rocket Park. The girls, who suffer from a skin disorder, were enjoying the high-tech NASA spacesuit-based garments that enable them to be outside in daylight. Regoberto Lumas (near right) holds his daughter, Erica, while Amanda Clanton looks on.

daylight for the first time. The HED organization, through an agreement with JSC's Office of Technology Transfer and Commercialization, has begun providing suits to the children who need them. It is estimated that several thousand children around the world suffer from various conditions that cause either sensitivity to light or problems in cooling their bodies.

"This project has been very rewarding to all those involved at JSC," said Robert Dotts, assistant director of the Office of Technology Transfer and Commercialization. "To take technology developed in the Space Program and use it to improve the lives of these children is incredible. In most cases it not only improves their lives, but the lives of their whole family."

"It's amazing to think that because NASA astronauts walk in space and on the moon, children can now play in the sun," said Sarah Moody, the HED Foundation's founder and president. The suits are designed to cost under \$2,000 and are now available in various colors. Many families, after years of having to deal with the restrictions of the child's condition, can live more normal lives.

Please see **TWO**, page 7



JSC Photos by Benny Benavides S99-05289

S99-05288

Astronaut Winston Scott, left, United Space Alliance employee Marlo Graves and Astronaut Joan Higginbotham welcome Houston Comets' basketball player Monica Lamb to JSC.



JSC hosts first annual Monica Lamb/NASA Science and Basketball Camp

About 100 students from the Houston Independent School District attended their own launch March 18 at JSC. Yes, "their own launch." They built and launched their own rockets. The students participated in the first annual Monica Lamb/NASA Science and Basketball Camp at Texas Southern University, during spring break.

Please see the whole story on Page 5.



Lovell: space program, economy on way up.

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High school students soar to new heights.

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Recycling exposes some trashy habits.

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INTERNATIONAL SPACE STATION UPDATE

Station flight controllers complete power tests

Last month, International Space Station flight controllers in Mission Control Centers in Houston and Moscow put the on-orbit segment through a series of tests. These were designed to determine the maximum amount of power that can be delivered to the U.S. segment by Zarya's electrical power system and the associated Node 1 shell heating rate.

A design deficiency in Zarya's charge-discharge units, known by the Russian acronym MIRTs, key components in the electrical power system which track the state of charge of each battery, made pre-flight estimates of power generation capabilities suspect and drove the need for the tests. The tests were conducted while the station's orbital environment was similar to that in which it will be when the Space Shuttle *Discovery* is docked to the station during STS-96.

The STS-96 crew is scheduled to replace the MIRTs during an in-flight maintenance procedure, but until the MIRTs are fully functional, flight controllers must use the system as is to provide for all electrical energy needs of the ISS. The most significant of these needs is the power required to heat up Unity prior to the crew's ingress during the STS-96 mission.

"The objective of these tests is to demonstrate that in the beta angle we will fly for STS-96, we can run the power system as high as we need to run it in order to warm up the Unity module so that we can send the crew in on time," said Paul S. Hill, lead ISS flight director for STS-96.

Test one, completed April 2, gathered insight in how best to plan for warming the



NASA International Space Station Flight Director Paul S. Hill and Elaine Goddard, United Space Alliance power, heating, articulating, lighting and control officer, discuss requirements prior to the second power test.

ISS modules prior to *Discovery*'s docking with the station during STS-96. It demonstrated that higher power usage in the current configuration provides adequate battery margins in the Zarya module while warming Unity's shell temperatures, which is necessary before the shuttle docks to the station and the crew climbs inside. The test involved gradually increasing the power used aboard Unity by turning on several heaters to gather insight to plan the best method for warming the module.

Analysis of this first test showed that Zarya can deliver at least 900 watts of continuous power to Unity in its normal

operating position, thereby simplifying the operations planning for the shuttle flight. Since launch, the station systems have been operating on about 600 watts of power.

This test required extensive interaction between the control centers in Moscow and Houston to plan and conduct.

"The process of preparation for the test took two weeks," said Khrunichev Flight Director Yuri Budnik, who observed the first test from Houston and worked with the team in preparing for the second test. "It was very important that there was a Moscow support group in Houston and a Houston support group in Moscow. And thanks to the close

interaction of the specialists, we managed to reach a very good understanding."

The second power test aboard the ISS was completed April 16, setting the stage for the arrival of *Discovery*. The test involved repositioning the station to point the Zarya solar arrays more directly at the sun to increase power generation. The test demonstrated the ability of Zarya to deliver 1,700 watts of power to Unity after docking.

With the power levels demonstrated in these tests, the ISS flight control team gained confidence that the combination of heating before and after docking will allow the Unity shell temperature to be raised to about 66 degrees Fahrenheit to allow the crew to enter the module.

"In order to ingress the Unity module, we have to heat up its shell to a certain level to prevent condensation," said Leena Joshi, Barrios thermal operations resources officer.

The third and final test planned prior to STS-96 was carried out May 12. On April 29, the Russian flight control team uplinked an update to on-board software permitting use of only the small thruster jets on the Zarya module. This update prevents Zarya's 40 kilogram thrusters from firing during maneuvers while the shuttle is in proximity or docked to the ISS. During the test on May 12, Zarya was maneuvered through the sequence planned for shuttle docking to ensure the motion control system performs as expected with the software update. ■

ISS viewing opportunities from the ground can be found on the Internet at: <http://spaceflight.nasa.gov/realdata/sightings/>

Application deadline nears for NASA astronaut selection

NASA is currently accepting applications for mission specialist and pilot astronaut candidates to join the agency as it enters the era of International Space Station and continues the exploration of space. The deadline to submit an application is July 1. Applications received after July 1 will not be considered for this selection cycle but will be considered for future selection cycles.

An application package may be obtained by contacting the Astronaut Selection Office at 281-483-5907 or by writ-

ing to NASA-Johnson Space Center Astronaut Selection Office, Mail Code AHX, Houston, TX, 77058-3696.

Typically, successful applicants for the mission specialist astronaut positions have significant qualifications in engineering or science, while pilot candidates must have extensive piloting experience in high-performance jet aircraft.

Following an intensive six-month period of evaluation and interviews, the final selections will be announced in

early 2000. Successful applicants will report to JSC as astronaut candidates in the summer of 2000 to begin more than one year of training in anticipation of future space flight assignments. ■

Additional information on selection criteria and application forms is available electronically through the Astronaut Selection Office Web site at <http://www.jsc.nasa.gov/ah/jscjobs/aso/ascan.htm>

Space program and the economy: *Onward and upward*

By Jim Lovell

As long as there has been a space program, there have been detractors. "What are we doing up in space when we've got real problems right here on earth?"

I welcome that question since it gives me a chance to list the multitude of innovations we use every day that were first developed for space exploration. And that list keeps getting longer and longer.

Just last week I used a new ear thermometer to check the temperature of a squirming grandchild. The handy device is based on metal coatings technology developed for space helmets.

Smoke detectors, hand-held vacuum cleaners, water filters and ergonomic furniture are just some of the many household items first developed for use in space. The highly efficient foam insulation used in new homes was first used to insulate fuel tanks on liquid-fueled rockets.

Portable X-ray machines, programmable pacemakers and many surgical tools were all pioneered as part of the space program. Concentrated baby foods as well as the freeze-dried instant mixes we feed our kids were first consumed in space. Many of the biofeedback techniques used to reduce stress were first developed for use by astronauts.

Satellites have revolutionized telecommunications and the global positioning system can help navigators on land, in the air or on the seas find their position to within 10 feet anywhere in the world.

The list goes on and on. Studies have shown that for every dollar spent on space development, \$7 has been returned to the economy in the form of a new product or service. But one space-program spin-off is paying dividends greater than anyone ever imagined.

While the economy in many parts of the world is in shambles, the U.S.

economy keeps humming along. Americans are earning more money than ever before. Unemployment is at an all-time low. And, amazingly, inflation is virtually nonexistent.

Why is the American economy so strong? Economists, not generally known for brevity, answer with a single word: productivity. Since 1990, productivity increases in the U.S. have averaged 2.1 percent each year.

Besides our fabled work ethic, what is it that makes American workers so productive? Computers. American workers know

how to use computer technology to work better and smarter. And you can thank the space program for those computers.

During the 1950s, computers were the size of a supermarket. To travel into space, however, we needed computers that could fit into a phone booth. Companies like Fairchild and Intel experimented with ways to reduce the size of computers. The result was the microprocessor.

Every one of the tiny computer chips found in personal computers, network servers, airplanes, manufacturing equipment, cars, toaster ovens, washing machines, toys, alarm clocks and thousands of other products can trace

its heritage back to those integrated circuits first developed for the space program.

Thirty-five years ago, critics called the newly invented microprocessors "novelties" and "toys." Today, the cost of developing these "toys" has been returned a billion-fold, if not more.

NASA accounts for a mere 1 percent of the federal budget – an amazingly small amount when you consider the profound effect the agency's work has had on the quality of our lives. Ironically, while the

'What are we doing up in space when we've got real problems right here on earth?'

R&D budgets for other government agencies is increasing, NASA's continues to decline – this in spite of its extraordinary track record.

We must continue investing in technology and the space program. We should encourage our children to study math and science. If anything, we should invest more in science education. Standard & Poors DRI estimates that if our productivity and innovation continue at their present rate, real wages could rise by 9 percent over the next decade. Corporate earnings could rise as much as 54 percent.

Scientific growth means economic growth. The evidence is irrefutable. Let's not turn our backs on progress. There is still so much to discover – new medicines, new ways to protect the environment. ■

Jim Lovell, commander of Apollo 13, is the founding chairman of the Space Awareness Alliance's Advisory Board. The Alliance's public awareness campaign encourages Americans to learn about the many life-enhancing benefits brought to us from space. Readers may post electronic-mail messages for Mr. Lovell at www.SpaceConnection.org on the World Wide Web, or may write to Mr. Lovell at 2860 South Circle Drive, Suite 2301, Colorado Springs, CO, 80906.

C O M M U N I T Y N E W S



Photos by James Blair and Chris Rupert

JSC Photo S99-05269

Mark Fox of Fox Landscaping gives a tour of the Bldg. 30 conservation landscape.

The 1999 JSC Earth Day event was celebrated on April 22 with exhibits at the Gilruth Center and tours of the newly planted "conservationscape" on the south side of Bldg. 30. The theme of this year's event was "Earth, Wind and Air: Preserving the Future."

About 500 people toured the exhibits. Exhibitors answered questions about Earth-friendly options for gardening, landscaping, recycling, wildlife and lots of other topics. Astronauts were on hand to sign autographs. About 200 people took the conservation landscape tour at Bldg. 30. Those who went on the tour got a free bedding plant similar to those planted at Bldg. 30. ■



S99-05267

Dawn Fadner of Kelsey-Seybold pets a Savannah monitor held by Sandy Richbook, Moody Gardens outreach coordinator, during Earth Day activities at the Gilruth Center.

Earth Day celebration draws large crowd



JSC Photo S99-05266

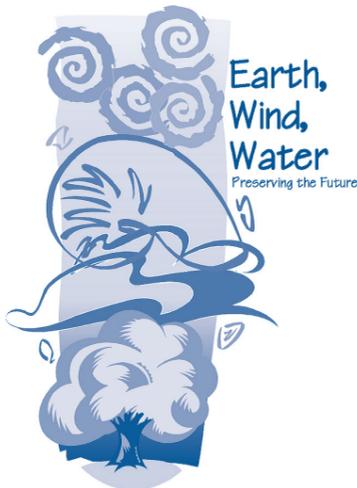
Astronaut Pamela Melroy signs autographs during Earth Day activities.

Children from JSC's Day Care Center sing for Earth Day visitors at the Gilruth.



S99-05502

Hailey Fields, 6, daughter of JSC employee John Fields, receives a free tree from the Texas Forest Service.



S99-05504

JSC makes first appearance at Houston International Festival

Alerts public to approaching center events



JSC Photo S99-05280 by James Blair

Pat Sprouse, foreground, and Angela Turner apply ink stamp "tattoos" featuring space shuttles, astronauts, planets, and rockets to the arms and hands of young visitors to the Johnson Space Center exhibit. JSC's first exhibit at the annual Houston International Festival the third and fourth weekends of April was an outstanding success. More than 4,000 plastic bags with NASA's logo on the side were given away to festival attendees who visited the booth. The exhibit was designed to alert the public to the approaching Open House event at JSC, August 28, and Inspection 99, November 3-5. Civil servant and contractor volunteers report they had fun representing JSC, while listening to zydeco music and Jerry Jeff Walker on the stage just across from their station. ■



JSC Photos by Robert Markowitz 99e03898

Goliad High School student Sarah Taylor and counselor Brenda Gohmert evaluate their capability to turn EVA fasteners at different torque levels without using a foot restraint.



99e03949

Industrial High School students conduct Asteroid Rover Attitude Control Experiment.

High school students soar to new heights

'This is the most awesome thing I've ever done in my entire life. I learned how to communicate and get along with my crew. Everyone at NASA is so dedicated and enjoys their work so much.'

—Sally Rost, junior at Orangefield High School



Aboard NASA's KC-135, Rost conducted her first experiment in microgravity. After three months of developing and planning their experiment, Rost and her fellow teammates were excited. Their experiment, designed to use the microgravity environment aboard the KC-135 to generate a 3-dimensional magnetic field, worked the way the team predicted.

"Our flight crew and our ground crew all worked well together," said teammate Nancy Locke. "It was a great learning experience. First of all, we learned how magnetic fields interact; and through the tours and working with our JSC mentor, we also learned about the different careers available at the Johnson Space Center."

Seventeen high school teams from across eastern Texas got a chance to fly their experiments aboard the KC-135 last month in the first Texas-wide NASA Reduced Gravity Student Flight Opportunities high school

program, funded by NASA and administered by the Texas Space Grant Consortium. Nine flight teams flew the week of April 12 and eight teams the week of April 19. The teams were drawn from high schools in Edinburg, Corpus Christi, Victoria, Houston, Beaumont, Huntsville, Kilgore, Mount Pleasant, Wichita Falls and Richardson. Each region provided two teams of students. Next year, students will be selected from western and northern areas of the state.

Each team was comprised of four student flyers, a teacher, a JSC or contractor scientist or engineer who served as a mentor, and, occasionally, a professional journalist. Most teams also had a ground crew of up to eight students. Each team got two flights aboard the microgravity aircraft; teachers flew twice

and mentors flew once. Journalists flew once with some teams.

Experiments flown aboard the KC-135 covered a vast range of scientific inquiries from analyzing the effects of varying acceleration forces on simple household mechanical devices, to evaluating the Maintenance Work Area that will be used on the International Space Station, to studying human adaptation to microgravity and its effects on aging.

"The purpose of the program is to provide students with an educational experience that will encourage them to pursue studies in science, math and technology," said Donn Sickorez, JSC's university affairs officer. "Further, the program let them work with engineers and learn more about the engineering profession. The students may be interested in aerospace, but until now they may have never had the opportunity to be exposed to the field firsthand."

Heidi Airey, a teacher at Orangefield High School, agrees. "This program has been fantastic. The students were able to meet engineers and learn more about engineering so that they can explore whether or not they may be interested in entering the profession in the future. In the classroom it's hard to give them this exposure. Moreover, the students learned not only about magnets, science and engineering but also about the importance of organizational skills."

In addition to learning important lessons in engineering, science and math, the students gained a deeper appreciation of teamwork.

"Our experiment was using an accelerometer to measure the head motion of a dummy during microgravity," said Erin Taylor, Van Alstyne High School student. "We learned the value of cooperation. We learned how to work together as a team."

"The program brought the students

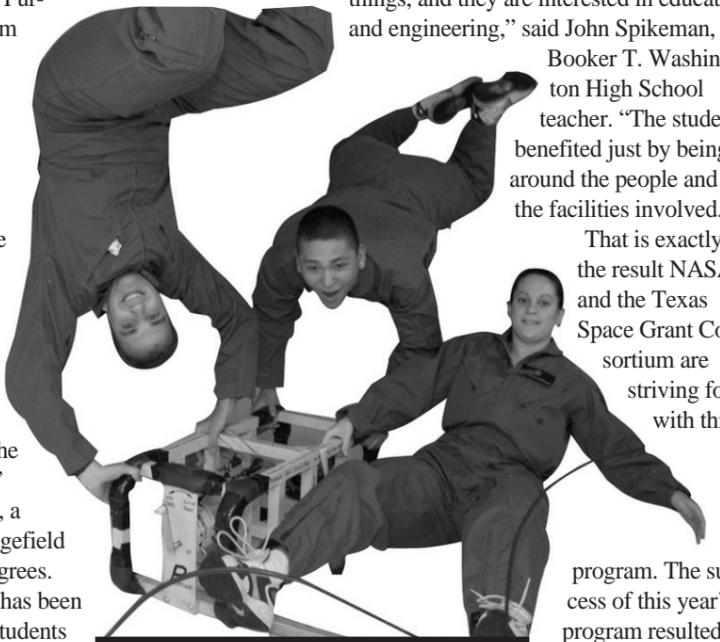
together as a more cohesive group," said Carol Smith, Van Alstyne High School teacher. "The program also gave them a wider perception of what engineering is and how science can be applied to the skills that they learn in school."

The opportunity to fly aboard the KC-135 followed a 3-month "internship" for the student flyers, during which time they worked with a JSC or contractor scientist or engineer who served as a team mentor. This experience was as important as the flight itself. It's how the students learned about what engineers do and what opportunities are available in the profession.

"This was an incredible experience because it showed me and my students that NASA is made up of real people doing real things, and they are interested in education and engineering," said John Spikeman,

Booker T. Washington High School teacher. "The students benefited just by being around the people and the facilities involved."

That is exactly the result NASA and the Texas Space Grant Consortium are striving for with this



99e03895

program. The success of this year's program resulted from the coopera-

tion of many organizations.

"The program would have been impossible to implement without the cooperation of JSC, the contractor community, Space Center Houston, the Texas Space Grant Consortium, the Texas Education Agency, and all of the teachers from the selected high schools," said Sickorez.

The program was so successful that many students are already looking forward to flying again once they begin their university studies.

"We tested torque on an object in microgravity," said Brian Booth, Central High School student. "If we were to do this experiment on the college level, we would have more flyers to gain a broader range of experience." ■



99e04426

Orangefield High School students discover the 3-dimensional shape of a magnetic field using iron filings and powerful magnets.

JSC hosts first annual Monica Lamb/NASA Science and Basketball Camp



Houston Comets' player Kim Perrot, center, signs autographs.

About 100 students from the Houston Independent School District attended their own launch March 18 at JSC. Yes, "their own launch." They built and launched their own rockets. The students participated in the first annual Monica Lamb/NASA Science and Basketball Camp at Texas Southern University, during spring break.

The camp was the vision of Monica Lamb, center for the two-time championship Women's National Basketball Association's Houston Comets. After hosting expensive basketball camps around the country, Lamb was saddened that many inner-city children right here in Houston might not ever be able to attend such a camp because their families cannot afford the cost. Being a native Houstonian and a product of the HISD, she was determined to make sure that some underprivileged students in Houston were afforded the opportunity to attend such a camp at no expense. She received moral support from the Houston Comets, but understood that she would have to endure the financial costs alone.

Lamb had previously met and worked with Marilyn Donald, JSC equal employ-

ment opportunity specialist, at other JSC-supported outreach programs designed to increase the number of minorities and females entering the science and engineering fields. Lamb contacted Donald to partner with JSC to make her vision a reality that the Comets, JSC and all of Houston could be a part of. Donald then contacted Space Center Houston and JSC employees Tamara Martin, Keith Combs, Gladys Henderson, Pat Lawson and other members of the Houston National Technical Association.

This began a Lamb/NASA partnership that would produce one of the most exciting, rewarding, athletic and educational camps ever held in Houston. Texas Southern University provided the facilities, JSC provided the classroom instructors and guest speakers, and Lamb provided the basketball lessons and other guests speakers, including Houston Comets' basketball player Kim Perrot. Gail Wittermore-Smith, Angela Vong and Shana Appel of Texas STAR-BASE, a national nonprofit educational organization, provided a one-day training course for JSC employees to teach them how to help the students build



Monica Lamb/NASA Science and Basketball Camp committee members, from left, front, are: Marilyn Donald, Tamyra Martin, Winston Scott, Gladys Henderson and Keith Combs; back: Monica Lamb and Johnny Pete.

their rockets and classroom support the day the students built their rockets. Space Center Houston provided in-kind support including a launch pad and two employees to assist in the rocket launching.

Donald told Lamb that education is the main goal when JSC participates in outreach programs. Therefore, the camp was designed to give the students a full week of extensive but fun hands-on science projects with an emphasis on teamwork and NASA-specific projects. Martin, Combs, Henderson, Lawson and other JSC engineers developed the entire curriculum for the camp and served as classroom instructors. Each day of the weeklong camp, the children completed one-half day of hands-on science projects and one-half day of basketball lessons. Classroom curriculum covered many topics including the solar system, the Extravehicular Activity spacesuit, the effects of microgravity and rocket building.

"I put my heart and soul into this project because so many inner-city children are not exposed early enough to how math and science can benefit everyone," said Martin. "The kids are afraid of math and

science because their parents were, and I felt that it was my duty to share with them that math and science can be fun and rewarding to them as individuals and to society as a whole."

According to Combs, "Inner-city school students are not exposed to what NASA is really about or are unaware that there are unlimited career opportunities available here if they choose to pursue them. The students just might be interested in and quite capable of making a significant contribution to NASA's missions in the new millennium if we mentor them at an early age. The Monica

Lamb/NASA Science and Basketball Camp afforded us an opportunity to do that."

Then came the grand finale. For the major hands-on science project, the students built mock rockets and launched them, 100 to 200 feet in the air, at an open field near Rocket Park. Astronauts Yvonne Cagle, Winston Scott and Joan Higginbotham assisted the students during the rocket launch to provide encouragement and serve as role models for the children. The energy, enthusiasm and intelligence the students displayed was overwhelming. ■



Russell Cowen of Space Center Houston helps the students place their rockets on the launch pad.

'It was an awesomely rewarding opportunity to combine science, sports and team-building skills in a unique setting that allowed us to plant seeds that may grow the next generation of minority and female scientists, engineers and astronauts for NASA.'

—Marilyn Donald

Ripped from the ROUNDUP

Ripped straight from the pages of old Space News Roundups, here's what happened at JSC on this date:

1 9 8 4

NASA has announced 17 new astronaut candidates for the Space Shuttle Program, four of whom now work at the Johnson Space Center.

Current JSC employees selected to become astronaut candidates are U.S. Army Maj. James C. Adamson, a flight controller in the Systems Division; Marsha S. Ivins, a flight simulation engineer with the Aircraft Operations Division; Dr. Ellen L. Shulman, a medical officer with the Medical Sciences Division; and Charles L. Veach, an aerospace engineer and pilot with the Aircraft Operations Division..

1 9 8 9

A month of work remains before Space Shuttle *Columbia* rolls from its Orbiter Processing Facility hangar at the Kennedy Space Center to be mated with its external tank and solid rocket boosters in the Vehicle Assembly Building.

Workers in Florida prepared this week for the crew equipment interface test aboard *Columbia*. The crew for the STS-28 mission will take part in the test scheduled to begin this weekend. *Columbia* will be commanded by Brewster Shaw, a veteran of two previous shuttle missions-STS-9 and STS-61B. Dick Richards will serve as pilot. Rounding out the crew are Mission Specialists Dave Leestma, Jim Adamson and Mark Brown. Richards, Adamson and Brown will make their first space flights. Leestma served as mission specialist on STS-41G.

1 9 9 4

Two of JSC's own returned this week when astronauts Norm Thagard and Bonnie Dunbar arrived from Russia for three weeks of life sciences training in support of joint U.S.-Russian space flights.

Accompanying Thagard and Dunbar were their cosmonaut crew mates Vladimir Dezhurov, Gennady Strekalov, Anatoly Solovyev, Nikolai Budarin, Yury Onufrienko and Alexandr Poleshchuk.

Street smarts: pedestrian close calls on the rise

By Mary Alice Pruessner

Crossing the street is a skill most of us learned in grade school – stop and look both ways before crossing the street.

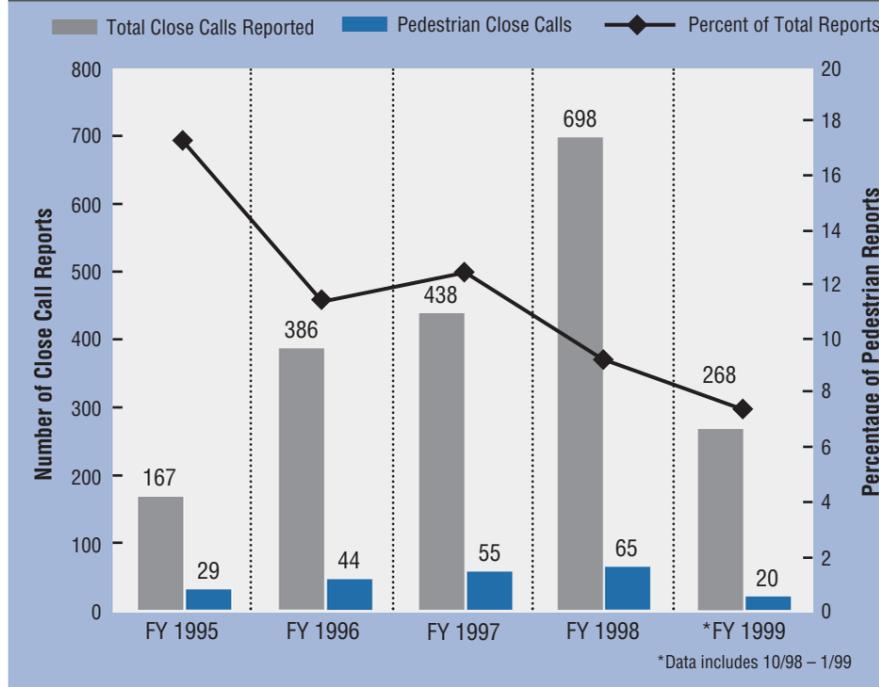
In the history of JSC, there have been at least five cases of pedestrians being struck by vehicles. The last pedestrian/vehicle accident was in 1994.

To date there has never been a pedestrian/vehicle fatality. However, in reviewing the Close Call reports for the last five years, it becomes clear that there have been many, many times that someone was just plain lucky. This is especially true in recent months.

The crosswalk issue was studied in 1996 by a subcommittee of the Executive Safety Committee. They made a series of site modification recommendations that were implemented in 1997. Since that time, the number of pedestrian reports has gone up, but the percentage of the total Close Call reports has gone down (see graph).

As more attention and energy has been directed to this subject, it has become a very emotional issue. One particular event

Pedestrian Close Call Data



reflects the paradox of the pedestrian/driver perspective. Two separate close calls were filed for the same event, one by the driver, one by the pedestrian. The pedestrian's account asserted that the vehicle failed to yield to the pedestrian, that he was "almost hit," and recommended that "vehicular safety be mandated." The driver's account stated that she saw the pedestrian crossing the road, but she did not see a crosswalk, was driving "within posted speed limits" and "was no where near hitting the pedestrian."

Another recent close call event demonstrates the increasing emotional volatility of this issue. As a vehicle drove

through a crosswalk with pedestrians already in the street, one of the pedestrians yelled at the driver. The driver yelled back. The situation escalated until the driver pulled over to the side of the street and brandished a tennis racket at the pedestrians in a very heated conversation. No one was injured and it did not escalate past this point.

The bottom line is common sense – for both the pedestrian and the driver. There is so much at stake for such minimal effort. Remember the simple facts of staying safe. Always be aware of your surroundings, drive defensively and watch out for pedestrians. ■

NASA technology leads to oil patch patent

Bernt Hellesoe, president of UNITECH International, Inc., decided to consolidate his Houston and Bergen, Norway, offices in the greater Clear Lake area in 1996 because of proximity to clients and access to NASA's engineering. His decision paid off.

Within a year, UNITECH yielded a patent for the Multi Quick Connector stab plate based on technology discovered during one of JSC's annual Inspection events. The MQC stab plate has generated millions of dollars in revenue and contributed to lowering production costs of oil and gas.

"Our annual Inspection is one of the many ways we work to share our technologies, expertise and state-of-the-art facilities with the business and academic community," said JSC Director George Abbey. "UNITECH's patented Multi Quick Connector is a prime example of how NASA's research and technologies have been applied in many industries and

have led to improvements and rich rewards in science, engineering, manufacturing, operations and training activities."

Hellesoe participated in Inspection 97 and was exposed to technologies that inspired the development and patent for UNITECH's MQC stab plate.

"I was introduced to a number of technologies at NASA including robotics, manipulators and the loading arm used for the shuttle," Hellesoe said. "Although NASA deals in space and UNITECH deals with the deep sea, we are still using the same principle of loading and unloading payload. The difference is that NASA uses a step-by-step approach and we were attempting to complete tasks all at once. The step-by-step approach turned out to be our solution and it put us on the right track to developing and patenting the Multi Quick Connector stab plate."

UNITECH uses Remote Operating Vehicles to connect and disconnect

couplers under water. ROVs are necessary because control lines cannot be hooked up by divers in five to six thousand feet of water. The MQC stab plate operates under the guidance of a ROV and is significant because it improves reliability and safety during ROV docking and connection phases, all of its parts are retrievable, all of the critical seals, latching and locking details are on the ROV side and it offers a separation of couplers for test purposes, without requiring undocking. Since debuting on the market about a year ago, the MQC stab plate has generated approximately \$5 million in revenue for UNITECH and contributes to lowering production costs of oil and gas.

"UNITECH continues to move forward in part because NASA allows people like me the opportunity to develop new ideas based on their existing technology," said Hellesoe. ■

TICKET WINDOW

Exchange Store hours

Monday-Friday

Bldg. 3 7 a.m.-4 p.m.

Bldg. 11 9 a.m.-3 p.m.

All tickets are non-refundable.

Metro tokens and value cards are available.

For more information, please call x35350.

The following discount tickets are available at the Exchange Stores

General Cinema Theaters	\$5.50
Sony Loew's Theaters	\$5.00
AMC Theaters	\$4.75
Fiesta Texas	adult . . . \$18.25 . . . (child under 48") . . . \$15.50
Astroworld Early Bird (valid through May 31)	\$17.75
Astroworld One-day Admission	\$21.00
Astroworld Season Pass (valid at all Texas Six Flags Theme Parks and Water World)	\$54.75
Water World	\$10.75
Moody Gardens (2 of 6 events)	\$9.75
Sea World	adult . . . \$27.25 . . . child (age 3-11) . . . \$18.25
Schlitterbahn Water Park	adult . . . \$20.75 . . . child (age 3-11) . . . \$17.50
Space Center Houston	adult . . . \$10.25 . . . child (age 4-11) . . . \$6.50
(JSC civil service employees free.)	
Space Center Houston Annual Pass	\$18.75
Splash Town Water Park	adult . . . \$14.50 (child 48" and under) . . . \$11.50



Revving up on recycling: *delving into some trashy habits*

The Environmental Stewardship's Recycling Working Group has started delving into some trashy habits at JSC. The group has come up with some ways to improve existing recycling activities at JSC and will also look at new items that could be added to the center's recycling program.

All of the items in the trash can are potentially recyclable except food waste (which could possibly be composted). And the white paper, aluminum cans and printer cartridges can be recycled at JSC. The group will be using these numbers to help decide where to focus the center's recycling program. There are other areas on site where different kinds of wastes other than typical office wastes are generated and those will be investigated, too.

As just about everyone knows, JSC currently collects and recycles aluminum cans and white paper. Cardboard is also collected, primarily from the Logistics area since so many items are received in cardboard. Currently, Tolman Building Maintenance picks up four to five tons of cardboard each month. Once collected, the cardboard is taken to a compactor at Bldg. 336, and the contents are emptied for recycling one to two times a month. However, lots of hardware, computers and other items are shipped in cardboard packaging and delivered directly to buildings on site.

To find out where the majority of the cardboard is generated, group members Chris Slade and Sandy Parker conducted a survey. First, they reviewed the number of items that are shipped through Logistics Central Receiving and determined which buildings receive the most packaging. These buildings include 3, 4S, 9, 10, 11, 16, 44, 45, and 227. Then, they visited each of the buildings and took

photographs of the areas currently being used to collect the discarded cardboard packaging material.

As a result of the survey, BRSP, with funding and support of the Center Operations Directorate's Logistics Division, is providing collection carts to allow for easier and proper storage of the cardboard. More efficient storage will hopefully increase cardboard collection. Each of these buildings will be provided with a new cart, and the facility managers along with the appropriate shipping and receiving personnel will receive instructions for proper cardboard storage and pick-up once the cart is full. Also, look for a JSC announcement of the new cardboard collection procedure.

JSC recycles scrap metal, toner cartridges, lead-acid and nickel cadmium batteries, silver from the photographic laboratory, metals from metal finishing and photographic

processing wastes, and mercury from facility equipment. In November, JSC partnered with a company to take some construction wastes, like concrete and soil, that will be used by the Texas Department of Transportation as raw materials for aggregate and roadbed materials in its construction projects.

A new Presidential Executive Order, "Greening the Government through Waste Prevention, Recycling, and Federal Acquisition," requires federal agencies to develop affirmative procurement programs for the purchasing of certain items that contain recycled content (when economically feasible and available). The EO also requires federal facilities to review and revise standards and product specifications, to report their progress on recycling and solid waste prevention or waste diversion, and to provide outreach programs and implement new technologies.

Some items that contain recycled content include paper and paper products, re-refined lubricating oils, traffic cones, retread tires, building insulation products, latex paints, floor tiles, running tracks, garden hoses, lawn and garden edging and pallets. JSC is working toward doing its part to comply with the Executive Order. The following items

purchased by JSC Logistics have recycled content: copy and loose leaf paper; paper notebooks, pads and steno pads; toner cartridges; 3 1/2" disks; storage and filing binders; trash bags; tape dispensers; wire and metal vertical desk organizers; toilet paper; paper towels;

envelopes and some calendars. Here are a few recycling related facts to ponder (taken from www.houstonrecycles.com). Texans dump enough trash every two weeks to fill the Astrodome.



JSC Photos by Benny Benavides S98-19282
Jake Giden of Brown and Root places cardboard in the cardboard compactor in the 300 area. The cardboard is collected here for recycling offsite.

To get a better idea of exactly what is in JSC's trash, one of the group's members went to a typical office trash can and found some surprising things. Here's a breakdown:

Non-white Paper/ Newspapers/Magazines	4.0 pounds
White Paper	1.5
3-Color Printer Cartridges	2.5
2 Glass Bottles	0.5
Newspaper and Magazines	2.0
3 Plastic CD Boxes	0.5
Cardboard	0.4
Food Waste	0.4
11 Aluminum Cans	0.4
Spray Can	0.25
Plastic Beverage Bottle	0.05
Total	~10.5 pounds

JSC Recycling Work Group members, from left, Robin Nini (USA), Vivian Preiss of the Center Operations Directorate and Mary Halligan of the Engineering Directorate place a poster with the results of a trash can audit on an aluminum can recycling bin prior to Texas Recycles Day last year. The information showed that a lot of recyclables are being thrown out at JSC.



S98-19281

The 19.2 million tons of Texas municipal solid waste would fill two lanes of IH-10 from Beaumont to El Paso 10 feet high.

In the U.S., 8 out of 10 people are willing to separate household trash for recycling.

The recycling industry accounts for more than 20,000 private-sector jobs in Texas in the processing and end-market facilities, adding \$2.8 billion to the Texas economy annually.

Throughout the year, at least 20 percent of solid waste by Texans comes from grass clippings, tree leaves and other landscape wastes.

Recycling one aluminum can saves enough electricity to power a TV or a 100-watt light bulb for three hours.

The average baby will use about 10,000 diapers before toilet training. An estimated one billion trees a year are required to produce disposable diapers.

For more information about the JSC Recycling Working Group, or would like to join the group, please contact Jo Kines of the Environmental Services Office or Robin Nini of United Space Alliance. ■

Continued from Page 1

Two special girls

The organization began in 1986 when Moody sought help from Langley Research Center in finding a cooling garment for her nephew, who suffered from HED. Victims of HED lack sweat glands, which can lead to heat stroke, heat exhaustion and even death.

The foundation also provides cooling garments to children with multiple sclerosis, spina bifida, cerebral palsy and other disorders. A documentary on that use of technology was widely televised, resulting in the creation of the foun-

dition. Moody says people and organizations she refers to as her "Angels Network" have made a huge difference.

In 1997, JSC, seeking a broader use for spacesuit technology, offered Moody the concept for the UV-protective garment and a fashion model donated money to the foundation. Word spread and more donations came from other sources.

The first three suits distributed were prototypes provided by NASA. The foundation has provided 15

additional UV suits, most to children suffering from XP disease. The most recent was in January – it went to a 5-year-old girl in Keystone Heights, Fla. ■

For more information, contact the HED Foundation at Box 9421, Hampton, Va., 23670, or at <http://www.hedfoundation.org>.

DATES & DATA

May 24

Alzheimer's support group meets: The Clear Lake Alzheimer's Caregiver Support Group will meet from 7:30 p.m. to 9 p.m. May 24 in the first floor conference room in St. John Hospital, West Building, in Nassau Bay. For details, call Nancy Malley (281-480-8917) or John Gouveia (281-280-8517).

May 26

Astronomy seminar: The JSC Astronomy Seminar will meet at noon May 26 and June 2 in Bldg. 31, Rm. 248A. For details, call Al Jackson at x35037.

Spaceland Toastmasters meet: The Spaceland Toastmasters will meet at 7 a.m. May 26 and June 2 at the House of Prayer Lutheran Church. For details, call George Salazar at x30162.

Communicators meet: The Clear Lake Communicators, a Toastmasters club, will meet at 11:30 a.m. May 26 and June 2 at Lockheed Martin, 555 Forge River Rd. For details, call Allen Prescott at 282-3281 or Mark Caronna at 282-4306.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. May 26 and June 2 at United Space Alliance, 600 Gemini. For details, call Patricia Blackwell at (281) 282-4302.

May 27

National Space Society: The National Space Society will hold the 18th annual International Space Development Conference May 27-31, 1999, at the Hobby Airport Radisson Hotel, 9100 Gulf Freeway. Call 1-800-333-3333 by May 12 for reservations at the \$75 rate.

Radio Club meets: The JSC Amateur Radio Club will meet at 6:30 p.m. May 27 at the Piccadilly, 2465 Bay Area Blvd. For details, call Larry Dietrich at x39198.

May 28

Apollo 10 anniversary: The NASA Alumni League will sponsor a celebration of the 30th anniversary of Apollo 10 at the Radisson-Hobby May 28. See the National Space Society's International Space Development Conference registration form at <http://www.nss.org/isdc>. Those interested in attending may also contact Norm Chaffee at 281-483-3777 or Chet Vaughan at 281-336-4140. For additional information about the ISDC, contact Marianne Dyson at 281-486-4747. For details about the Apollo 10 celebration, contact Don Brown at 281-488-0754.

June 3

Warning System Test: The site-wide Employee Warning System will perform its monthly audio test at noon June 3. For details, call Bon Gaffney at x34249.

June 7

NSBE meets: The National Society of Black Engineers will meet at 6:30 p.m. June 7 at Texas Southern University, School of Technology, Rm. 916. For additional information, call Kimberly Topps at 281-280-2917.

June 9

IAAP meets: The Clear Lake/NASA Chapter of the International Association of Administrative Professionals (formerly Professional Secretaries International) will meet at 5:30 p.m. June 9 at Bay Oaks Country Club. Cost is \$16. For details and reservations, call Tami Barbour at 281-488-0055, x238.

June 10

MAES meets: The Society of Mexican-American Engineers and Scientists will meet at 11:30 a.m. June 10 in Bldg. 16, Rm. 111. For details, call George Salazar at x30162.

Office of Criminal Investigations Hot Line

The Office of Criminal Investigations is the investigative arm of the NASA Inspector General. The primary mission of this component is to conduct criminal and civil investigations of reported or suspected fraudulent acts by employees, contractors, and others relating to the administration of NASA contracts and programs. Although much emphasis is placed on major procurement fraud (particularly allegations of product substitution, cost mischarging, kickbacks, anti-trust violations, and research misconduct), investigations are also conducted of theft, conflict of interest, environmental and hazardous waste violations, health care fraud, and computer-related crimes. The OCI also provides fraud briefings for government and contractor employees that are designated to highlight potential risks concerning safety, fraud, waste or mismanagement. To schedule a briefing, call 281-483-8427. To report suspected violations, call 281-483-8427 locally or the toll free Hotline at 1-800-424-9183, or write: NASA Inspector General, P.O. Box 23089, L'Enfant Plaza Station, Washington, DC 20024. The OIG Cyber-Hotline can be accessed at www.hq.nasa.gov/office/oig/hq.

NASA BRIEFS

NASA WORKING TO IMPROVE CRIME-SCENE TECHNOLOGIES

Watch out, America's most wanted. NASA scientists are developing promising new software technologies and instruments to help law enforcement agencies catch criminals by improving the analysis of crime-scene evidence.

Marshall Space Flight Center has demonstrated software that enhances and improves dark, blurry videotape — technology used by law enforcement to study video of the bombing at the 1996 Olympic Games in Atlanta. And Goddard Space Flight Center is working with the National Institute of Justice to develop remote crime-scene analysis.

Goddard and the National Institute of Justice will study how remote-sensing technology — used to study everything from crops on Earth to galaxies millions of light-years away — might allow investigators in a central location to study a distant crime scene.

Criminologists may be able to identify everything from fingerprints to gunpowder residue without disturbing a crime scene, preserving the chain of evidence while saving time and money.

IMPROVING HEALTH FROM A DISTANCE

Doctors at five distant sites in the United States recently demonstrated how to use NASA telemedicine to diagnose patients, practice operations and train, using 3-D medical images carried by a high-capacity computer network.

The NASA telemedicine system, demonstrated recently at Ames Research Center, has potential for improving health care at the far corners of the Earth by linking remote sites with the best medical minds and facilities.

During the demonstration, physicians used 3-D, scanned images of patients' hearts, skulls and other body parts. On computer screens, doctors at the five sites saw every procedure in stereo 3-D as each physician manipulated images of the virtual patient. The specialists used high-fidelity, NASA-developed 3-D imaging software to analyze and discuss patients.

NASA RENAMES CENTER IN JOHN GLENN'S HONOR

On May 7, NASA paid tribute to John Glenn, a symbol of the Agency's past, present and future, by renaming the Agency's Ohio center the John H. Glenn Research Center at Lewis Field.

The salute to Ohio's native son and former senator began with a parade at the center for employees, registered media and honored guests. The parade led into a picnic, where everyone gathered to eat and listen to music performed by the all-astronaut band, "Max Q."

The ceremony was held in the Glenn Hangar. NASA Administrator Daniel Goldin, U.S. Senator Mike DeWine and Glenn Center Director Donald Campbell participated.

GILRUTH CENTER NEWS

Hours: The Gilruth Center is open from 6:30 a.m.-10 p.m. Monday-Thursday, 6:30 a.m.-9 p.m. Friday, and 9 a.m.-2 p.m. Saturday. Contact the Gilruth Center at 281-483-3345.

Sign up policy: All classes and athletic activities are on a first-come, first-served basis. Sign up in person at the Gilruth Center and show a yellow Gilruth or weight room badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For additional information, call x33345.

Gilruth badges: Required for use of the Gilruth Center. Employees, spouses, eligible dependents, NASA retirees and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday and 9 a.m.-2 p.m. Saturdays. Cost is \$10. Dependents must be between 16 and 23 years old.

Nutrition intervention program: Six-week program includes lectures, a private consultation with the dietitian and blood analysis to chart your progress. Program is open to all employees, contractors and spouses. For additional information call Tammie Shaw at x32980.

Defensive driving: One-day course is offered once a month at the Gilruth Center. Pre-registration required. Cost is \$25. Call for next available class.

Stamp club: Meets every second and fourth Monday at 7 p.m. in Rm. 216.

Weight safety: Required course for employees wishing to use the Gilruth weight room. Pre-registration is required. Cost is \$5. Annual weight room use fee is \$90. The cost for additional family members is \$50.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for eight weeks.

Step/bench aerobics: Low-impact cardiovascular workout. Classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks. Call Kristen Taragzewski, instructor, at x36891 for additional information.

Yoga: Stretching class of low-impact exercises designed for people of all ages and abilities in a Westernized format. Meets Thursdays 5-6 p.m. Cost is \$32 for eight weeks. Call Darrell Matula, instructor, at x38520 for more information.

Ballroom dancing: Classes meet from 7-8:15 p.m. Thursdays for beginner advanced classes and from 8:15-9:30 p.m. for beginner-intermediate and intermediate students. Cost is \$60 per couple.

Country and western dancing: Beginner class meets 7-8:30 p.m. Monday. Advanced class (must know basic steps to all dances) meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

Fitness program: Health-related fitness program includes a medical screening examination and a 12-week individually prescribed exercise program. For additional information call Larry Wier at x30301.

Check out all activities at the Gilruth online

<http://www4.jsc.nasa.gov/ah/exceaa/Gilruth/Gilruth.htm>



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